



## Staff's Suggested Modifications to 2018 Amendments Proposal

### Low Carbon Fuel Standard Regulation

AUGUST 8, 2018  
WORKSHOP  
SACRAMENTO, CA



## Presentation Overview

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- ☐ Statewide clean fuel point of purchase rebates for new electric vehicles using LCFS credit value
- ☐ Crediting provisions for ZEV fueling infrastructure
- ☐ Electricity and other reporting provisions
- ☐ Updates to CA-GREET3.0 and Simplified CI Calculators
- ☐ Protocol for carbon capture and sequestration projects
- ☐ Petroleum project provisions
- ☐ Third-party verification
- ☐ Timeline and Next Steps: 15-day Comment Period

## STATEWIDE CLEAN FUEL POINT OF PURCHASE REBATE FOR EVs

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### How are Current EV Rebates Funded by LCFS Credit Value?

- Opt-in utilities generate credits for residential EV charging
- Utilities sell credits to providers of high carbon fuels
- IOUs use the value of credit sales to offer rebates and other benefits to EV drivers as approved by CPUC
- POUs offer vehicle rebates, funding charging infrastructure and other benefits as approved by their governing boards



Image source: <https://www.smud.org/en/Going-Green/Electric-Vehicles/Residential#main-content>

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## Board Resolution 18-17 Directs the Executive Officer to Explore Options to Increase EV Rebates Funded by LCFS Credit Value

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*Explore with stakeholders the opportunities to increase the magnitude of ZEV vehicle rebates funded by sale of LCFS credits. Focus these discussions on the possibility to offer the rebate at the point of sale of the vehicle. Evaluate the opportunities to harmonize rebate designs statewide and explore synergies with other rebate programs, including the Clean Vehicle Rebate Project.*

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[https://www.arb.ca.gov/board/res/2018/res18-17.pdf\\_ga-1.168025499.1139169175.1533590188.1639146011.1639095438](https://www.arb.ca.gov/board/res/2018/res18-17.pdf_ga-1.168025499.1139169175.1533590188.1639146011.1639095438)

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## Joint Presentation by Utility and Automaker Stakeholders

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## Proposed Changes in Section 95483. Fuel Reporting Entities

- Staff proposes to require, in the regulation, a minimum utility percentage contribution to the statewide rebate program (should such a program be initiated by the large investor-owned utilities)
- This would provide clarity to the automakers and other interested stakeholders as to the magnitude of credits available annually

*"Upon California Public Utilities Commission (CPUC) approval of Pacific Gas and Electric's, Southern California Edison's, and San Diego Gas and Electric's filing to initiate a statewide point of purchase rebate, all opt-in EDUs must contribute a minimum percent of base credits for residential EV charging (or net base credit proceeds) to provide a statewide point of purchase rebate for new EV purchases and leases in California to be funded exclusively by LCFS credit proceeds, as per the contribution tabulated below:"*

EDU category	% Contribution
Investor-owned Utilities	67%
Large Publicly-owned Utilities	35%
Medium Publicly-owned Utilities	20%
Small Publicly-owned Utilities	0%

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## Proposed Changes in Section 95481. Definitions and Acronyms

- Staff proposes to define Large/Medium/Small POUs based on 2017 load served
- This would allow the ability to differentiate by utility size in the table on the prior slide

*"Large Publicly-owned Utility means a California POU with annual load served of more than 10,000 Gigawatt-hours (GWh) in 2017;*

*"Medium Publicly-owned Utility" means a California POU with annual load served of less than 10,000 GWh and more than 700 GWh in 2017;*

*"Small Publicly-owned Utility" means a California POU with annual load served of less than 700 GWh in 2017.*

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## Proposed Changes in Section 95483. Fuel Reporting Entities (Cont.)

- Staff proposes to add four tiers to determine the rebate amount based on battery capacity of the EV, similar to federal tax credit tiers
- This would ensure EVs with higher battery capacity get higher rebates as compared to EVs with lower battery capacity.

*"The rebate amounts for any statewide point of purchase rebate program must be calculated based on the vehicle's battery capacity as tabulated below:*

Battery Capacity (kWh)	Rebate %
$C < 5$	0%
$C = 5$	38.9%
$5 < C < 16$	$\left( 38.9 + \frac{(C - 5)}{11} \times 61.1 \right) \%$
$C \geq 16$	100%

Where,

*Rebate % means the percentage of maximum rebate a vehicle would receive under the statewide point of purchase rebate program funded by LCFS credit proceeds. The maximum rebate is the amount a vehicle with a battery capacity of greater than 16 kWh can receive; and*

*C means the rated battery capacity of the electric vehicle in kWh."*

## Proposed Changes in Section 95486.1. CARB Generating and Calculating Credits and Deficits Using Fuel Pathways.

- Staff proposes to estimate and issue credits for non-metered residential EV charging in service areas for which the EDU has not opted in to the LCFS
- This change would ensure the credits for residential EV charging that are not currently claimed can be used to provide a greater statewide point of purchase EV rebate

*"Using equation in subsection 1. above, the Executive Officer may also calculate, based upon the best data available to the Executive Officer, the quantity of non-metered electricity used in residential EV charging within service areas for which the EDU has not opted in. The Executive Officer may then assign a pro-rata share of this quantity of electricity to each EDU that has opted-in using the  $N_{(Non\ metered)}^{EV}$  values as the basis of this proration."*

## ZEV FUELING INFRASTRUCTURE PROVISIONS

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Proposed Changes in Section 95486.2. Generating and  
Calculating Credits for ZEV Fueling Infrastructure Pathways

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## HYDROGEN REFUELING INFRASTRUCTURE (HRI) PATHWAY

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## Cap on Total HRI Credits

- Staff proposes to add a methodology to determine the estimated potential HRI credits for all approved stations, both operational and under construction
- Additional HRI applications would only be approved if the estimated potential HRI credits were below 2.5% of deficits from the prior quarter
- This would strengthen the 2.5% limit on the total number of credits that can be generated for HRI pathway

*"Estimated potential FCI credits will be calculated using the following equation:*

$$Credits_{HRI}^{Potential} = Credits_{HRI}^{Prior\ qtr} \times \frac{Cap_{HRI}^{Approved}}{Cap_{HRI}^{Operational}}$$

*where:*

$Credits_{HRI}^{Potential}$  means the estimated potential HRI credits from all approved HRI stations;

$Credits_{HRI}^{Prior\ qtr}$  means the total HRI credits generated by operational stations in the prior quarter;

$Cap_{HRI}^{Operational}$  means the total HRI capacity of stations that were operational in the prior quarter; and

$Cap_{HRI}^{Approved}$  means the total HRI capacity of all approved stations, both operational and nonoperational."

## Limit Total Value Received Under HRI Pathway

- Staff proposes the total value of HRI credits along with any grant funding cannot exceed the total installation cost of the station
- The cumulative credit value would be estimated based on CARB published quarterly average credit prices
- Annual discount rate of 10% would be used to track the sum of values in all quarters in constant-dollar terms for the application year
- This proposed change would prevent over-compensating stations under the HRI provision when LCFS credit values are very high and/or station capital costs become low
- Does not affect LCFS credit generation and derived value for dispensed hydrogen

## Limit Total Value Received Under HRI Pathway

*"The estimated cumulative value of HRI credits generated for the station in the prior quarter must be less than the difference between the total capital expenditure reported pursuant to section 95486.2(a)(6)(C)1. and the total grant revenue or other funding reported pursuant to section 95486.2(a)(6)(C)5. in the prior quarter.*

1. *The estimated value of HRI credits, for the purpose of this determination, will be calculated using the number of HRI credits generated for the station in the quarter and the average LCFS credit price for that quarter published on the LCFS web site.*
2. *The cumulative credit value generated for each station will be tracked as the sum of all quarterly credit values in constant-dollar for the year in which the HRI application was approved using an annual discount rate of 10%.*
3. *The estimated value calculated under this provision will be made available only to the respective reporting entity in LRT-CBTS and will not be published on the LCFS web site.*
4. *This will not affect the reporting entity's ability to generate non-HRI LCFS credit for the hydrogen dispensed at the station."*

## Station Capacity Determination for HRI Crediting

- Staff proposes to use 24-hour nameplate station capacity for HRI crediting as calculated using the HySCapE 1.0 model or equivalent model or capacity estimation methodology approved by the Executive Officer
- The HySCapE 1.0 model was developed by the National Renewable Energy Laboratory under contract from the California Energy Commission
- This change is in response to stakeholder comments that a 12-hour capacity wouldn't provide sufficient HRI credits to support station installation

*"The 24-hour nameplate refueling capacity for the station calculated using the HySCapE 1.0 model or an equivalent model or capacity estimation methodology approved by the Executive Officer. The applicant must submit a completed model with the application."*



## Station Availability and Operational Hours

- Staff proposes to include the expected daily permitted hours of operation for the station in the initial application
- Staff also proposes to modify the station availability description to align it with the proposed approach of using a 24-hour station capacity, previously limited to a 6 am to 9 pm window
- This change will allow comparison of the permitted hours with the reported station availability to determine the uptime factor used for credit calculation

*“Station availability. This is the percentage of hours the station is available for fueling during the quarter relative to the permitted hours of operation for the station, as reported to the SOSS. Any period of time that SOSS reports that a portion of the station capacity is not available will count as a pro-rated amount of station availability, proportional to the percentage of the station capacity that remains available for fueling for this period of time.”*

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## Listed on Station Operation Status System (SOSS)

- Staff proposes a station must be listed as “open for retail” on the Station Operation Status System (SOSS) to be able to generate credits
- Staff also proposes to remove the previously proposed requirement for station dispenser performance to be verified by the County Department of Weights and Measures
  - Instead, staff proposes that all dispensers undergo type evaluation according to the California Type Evaluation Program (CTEP) and have either a temporary use permit or a type approval certificate of approval issued by the California Department of Food and Agriculture/Division of Measurement Standards
- This change will allow to align the HRI requirements with current industry practices

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## Listed on Station Operation Status System (SOSS)

*"The station is connected to the Station Operational Status System (SOSS), is listed open for retail, and:*

- 1. The station passed final inspection by the appropriate authority having jurisdiction and has a permit to operate.*
- 2. The station owner has fully commissioned the station, and has declared it fit to service retail FCV drivers. This includes the station owner's declaration that the station meets an appropriate SAE fueling protocol.*
- 3. At least three OEMs have confirmed that the station meets protocol expectations, and their customers can fuel at the station.*
- 4. All dispensers installed in the hydrogen refueling station have undergone type evaluation according to the California Type Evaluation Program (CTEP) administered by the California Department of Food and Agriculture/Division of Measurement Standards (CDFA/DMS) and have either a Temporary Use Permit or a type approval Certificate of Approval issued by CDFA/DMS."*

## Hydrogen CI Requirement

- Staff also proposes to increase the maximum company-wide weighted average CI to 150 gCO<sub>2</sub>e/MJ from 75 gCO<sub>2</sub>e/MJ
- This change would provide more flexibility for hydrogen generation methods and still meet the CI requirements of SB 1505

*"Dispensed hydrogen meets the following CI and renewable content requirements on a company-wide, weighted average basis. The Executive Officer will consider all the stations registered by an entity with a unique FEIN in the LRT-CBTS for calculating the company-wide weighted average CI and renewable content.*

- 1. CI of 150 gCO<sub>2</sub>e/MJ or less, and*
- 2. Renewable content of 40 percent or greater."*

## DC FAST CHARGING INFRASTRUCTURE (FCI) PATHWAY

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### Cap on Total FCI Credits

- Staff proposes to add a methodology to determine the estimated potential FCI credits for all approved sites, both operational and under construction
- Additional FCI applications would only be approved if the estimated potential FCI credits were below 2.5% of deficits from the prior quarter
- This would strengthen the 2.5% limit on the total number of credits that can be generated for FCI pathway

*“Estimated potential FCI credits will be calculated using the following equation:*

$$Credits_{FCI}^{Potential} = Credits_{FCI}^{Prior\ qtr} \times \frac{Cap_{FCI}^{Approved}}{Cap_{FCI}^{Operational}}$$

where:

$Credits_{FCI}^{Potential}$  means the estimated potential FCI credits from all approved FSEs;

$Credits_{FCI}^{Prior\ qtr}$  means the total FCI credits generated by operational FSEs in the prior quarter;

$Cap_{FCI}^{Operational}$  means the total FCI charging capacity of FSEs that were operational in the prior quarter; and

$Cap_{FCI}^{Approved}$  means the total FCI charging capacity of all approved FSEs, both operational and nonoperational.”

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## Limit Total Value Received Under FCI Pathway

- Staff proposes the total value of FCI credits along with any grant funding cannot exceed the total installation cost of the FSE
- The cumulative credit value would be estimated based on CARB published quarterly average credit prices
- Annual discount rate of 10% would be used to track the sum of values in all quarters in constant-dollar terms for the application year
- This proposed change would prevent over-compensating stations under the HRI provision when LCFS credit values are very high and/or station capital costs become low
- Does not affect LCFS credit generation and derived value for dispensed electricity

## Limit Total Value Received Under FCI Pathway

*“The estimated cumulative value of FCI credits generated for the FSE in the prior quarter must be less than the difference between the total capital expenditure reported pursuant to section 95486.2(b)(6)(B)1 and the total grant revenue or other funding reported pursuant to section 95486.2(b)(6)(B)5 in the prior quarter.*

1. *The estimated value of FCI credits, for the purpose of this determination, shall be calculated using the number of FCI credits generated for the FSE in the quarter and the average LCFS credit price for that quarter published on the LCFS website.*
2. *The cumulative credit value generated for each FSE will be tracked as the sum of all quarterly credit values in constant-dollar for the year in which the FCI application was approved using an annual discount rate of 10%.*
3. *The estimated value calculated under this provision will be made available only to the respective reporting entity in LRT-CBTS and will not be published on the LCFS website.*
4. *This will not affect the reporting entity’s ability to generate non-FCI LCFS credit for the electricity dispensed at the FSE.”*

## Connector Types at a DCFC Site

- Staff proposes to increase the maximum proportion of all charging equipment (also termed Fueling Supply Equipment or FSE) at a site that can support only one fast charging connector from two-thirds to three-quarters
- This would allow more flexibility for the market to drive optimal connector protocol ratios, yet will maintain equity in the program by requiring a diverse set of connector types be installed under this provision

*"If an individual applicant's estimated potential FCI credits exceed 0.5% of the prior quarter's deficits, each additional site applied for by that applicant must have charging equipment that can support at least two of the following three fast charging connectors: CHAdeMO, SAE CCS, and/or Tesla. Each site must have at least one FSE with a CHAdeMO connector and at least one FSE with an SAE CCS connector. No more than three-quarters of all FSE, subject to this provision, at a site can support one fast charging connector protocol only."*

## Power Rating Requirements and Limitations

- Staff proposes to limit the total amount of nameplate power rating to 2,500 kW for all FSEs per site
- In the original proposal, the limit was proposed at 1,500 kW based on total simultaneous power for all FSEs at a site
- Staff decided to switch the basis for this limit from total simultaneous power rating to total nameplate power rating because nameplate power rating is a more easily verifiable value
- This would allow DCFC sites in higher traffic locations to be eligible for FCI pathway

*"The nameplate power rating (kW), connector type(s), and model for each FSE. The total nameplate power rating for all FSE at a single site claiming FCI credit under this provision cannot exceed 2,500 kW."*

## Power Rating Requirements and Limitations

- Staff proposes to require the effective simultaneous power rating for each FSE must be at least 50% of the nameplate power rating
- This would ensure the useful FSE capacity is not significantly lower than the capacity used for crediting based on the nameplate power rating

*“The effective simultaneous power rating (kW) for each FSE calculated using the equation below. The effective simultaneous power rating must be at least 50 percent of the nameplate power rating for each FSE.*

$$P_{Sim}^i = P_{NP}^i \times \frac{P_{Sim}^{Tot}}{\sum_{i=1}^n P_{NP}^i}$$

where:

$P_{Sim}^i$  is the simultaneous power rating (kW) for FSE  $i$ ;

$P_{NP}^i$  is the nameplate power rating (kW) for FSE  $i$ ;

$P_{Sim}^{Tot}$  is the maximum total power (kW) that can be delivered to all FSEs at a single site when they are operated simultaneously; and

$n$  is the number of FSEs at a single site.”

## Charging Capacity for FCI Crediting

- Staff proposes a new method of calculating the FCI charging capacity, which is used in calculating the number of FCI credits
- The original proposed calculation method scaled the number of FCI credits linearly with the power rating
- Based on cost information provided by stakeholders, staff found the cost of DCFCs does not increase linearly with power rating
- The proposed method would more closely match the potential value of FCI credits awarded to the cost of DCFC installation
- Staff also proposes to increase the maximum FSE power rating from 150 kW to 350 kW for capacity and credit calculation
- This would allow the high power rating DC fast chargers installed in the near future to be eligible for FCI pathway

## Charging Capacity for FCI Crediting

*"The FCI charging capacity for each FSE calculated using the following equation:*

$$Cap_{FCI}^i = (P_{FCI}^i)^{0.45} \times 43$$

*where:*

*$Cap_{FCI}^i$  is the FCI charging capacity (kWh/day) for the FSE  $i$ ; and*

*$P_{FCI}^i$  is the nameplate power rating for the FSE or 350 kW, whichever is less."*

Nameplate Power Rating (KW)	Calculated Daily FCI Charging Capacity (kWh/day)
50	250
100	342
150	410
250	516
350	600

## FSE Availability and Operational Hours

- Staff proposes to remove the minimum number of hours from FCI eligibility criteria and require the applicant to report the total permitted hours of operation in the FCI application
- If the permitted hours of operation at the site are less than 24 hours, the applicant must provide documentation showing the permitted hours of operation
- Staff also proposes to modify the FSE availability description to account for the availability of the FSE compared to the permitted hours of operation
- These changes would allow the FSE to be credited based on its true availability for crediting without factoring in any non-operational hours

*"FSE availability. This is the percentage of hours the FSE is available for charging during the quarter relative to the permitted hours of operation for the site."*

## Demonstration of Operability

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- Staff proposes that FSEs must be built within 12 months of application approval, otherwise the application would be cancelled
- If cancelled, the applicant could reapply for the same FSE but would be eligible for only two years of crediting
- This requirement is designed to ensure that applicants are committed and prepared to install stations upon approval of the application

*“The FSE must be operational within 12 months of application approval. If the applicant fails to demonstrate the operability within 12 months of approval then the application will be canceled. The applicant can reapply for the same FSE site eligible only for 2 years of crediting.”*

## ELECTRICITY AND OTHER REPORTING PROVISIONS

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## Multi-family Residential EV Charging

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- Staff proposes to keep opt-in EDUs as the eligible credit generator for electric vehicle charging at multi-family residences
- EDUs are better suited to receive these credits to help support the point of purchase rebates for electric vehicles and infrastructure development in multi-family residences

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## Incremental Crediting Provisions

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- Staff proposes that incremental credits for residential electric vehicle (EV) charging can be generated for either providing low-CI electricity, or for smart charging, but not for both
- This will simplify the reporting requirements and will prevent any double counting of credits

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## Smart Charging or Smart Electrolysis

- Staff proposes to use the marginal emission signal from the CPUC's Avoided Cost Calculator to determine the hourly CI values for smart charging (or smart electrolysis) pathways
- Originally staff proposed to use historical curtailment probabilities for determining the CI values
- This would ensure the smart charging pathway rewards the shift in charging behavior that results in grid benefits
- Staff also proposes the EV load must be enrolled in a Time-of-Use (TOU) rate, if offered by the LSE, to be eligible for smart charging pathway
- This would ensure the smart charging benefits are aligned with the utility TOU rates

<http://www.carb.ca.gov/tier1/avoided-cost-calculator>

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## Smart Charging or Smart Electrolysis

CI Table for 2019 (gCO<sub>2</sub>e/MJ)

Hourly Window	Q1 CI	Q2 CI	Q3 CI	Q4 CI
1	87.06	86.91	86.87	90.25
2	87.06	85.91	86.80	88.55
3	87.06	87.20	86.77	87.80
4	87.06	87.03	86.72	87.91
5	87.63	91.45	87.17	90.98
6	94.46	105.76	95.77	105.08
7	110.98	94.28	92.09	122.40
8	105.79	2.48	88.39	109.22
9	86.35	1.96	89.39	94.27
10	58.66	2.92	91.09	90.26
11	57.80	50.25	93.23	89.84
12	56.52	53.31	97.87	91.17
13	55.97	55.12	104.23	92.03
14	56.50	58.67	110.13	93.36
15	56.53	63.57	115.76	95.25
16	57.80	26.45	123.91	104.30
17	92.45	48.57	131.52	136.96
18	125.85	120.79	146.52	156.40
19	144.90	151.38	155.70	153.00
20	127.62	150.96	140.27	141.37
21	114.50	122.63	118.35	130.78
22	95.55	93.62	100.45	115.22
23	88.25	88.12	91.21	102.03
24	87.07	87.12	88.57	93.34

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## Off-road Electricity Transportation

- Staff proposes to designate the owner of the FSE to be the eligible entity for generating credits for supplying electricity to electric transport refrigeration units (eTRU), electric power to ocean-going vessels (eOGV), and Electric Cargo Handling Equipment (eCHE)
- This is consistent with other electricity categories where first fuel reporting entity and credit generator is the FSE owner
- The FSE owner will still have an option to designate any other entity to be a credit generator on its behalf

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## Small CNG and LPG Stations

- Under the proposed regulation, fossil CNG and LPG would be required to participate in the LCFS beginning in 2019
- Staff is now proposing to increase the exemption threshold for small stations: Stations that dispense **150,000 GGE or less** may voluntarily opt-in until the use of the fuel in a heavy-duty application becomes deficit-generating
- Entities use Lookup Table CI values and may be eligible for Deferred Verification; therefore, cost of participation will be low

Fuel:	Fossil CNG	Fossil LPG
Credits for 150,000 GGE in 2019 (MT)	96	27
First Year of Deficit Generation (exemption expires)	January 1, 2024	January 1, 2021

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## Biomethane Provisions

- Definition of Biomethane

*“methane derived from biogas, or synthetic natural gas derived from renewable resources, including the organic portion of municipal solid waste, which has been upgraded to meet standards for injection to a natural gas common carrier pipeline, or for use in natural gas vehicles, natural gas equipment, or production of renewable hydrogen. Biomethane contains all of the environmental attributes associated with biogas and can also be referred to as renewable natural gas.”*

- Book-and-claim Accounting for Biomethane

- Original proposal included book-and-claim accounting for biomethane: 1) used as a transportation fuel (e.g., bio-CNG), 2) used as a feedstock to produce hydrogen
  - RNG-derived Hydrogen may be used either as a transportation fuel, or used in petroleum refineries under the Refinery Renewable Hydrogen Refinery Credit provision
- Staff now proposes, consistently, to also recognize book-and-claim accounting for biomethane used to produce hydrogen for use in biorefineries (e.g., renewable diesel).

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## Facilities with Multiple Pathways

- Facilities that process more than one feedstock may apply for multiple pathways
- Propose to clarify how to allocate feedstock to each unit of fuel
  1. A feedstock cannot be counted more than once
    - Verification includes review of all feedstock inputs and fuel production—regardless of final market—to assure no double counting of feedstock attributes
  2. Feedstock inventory must be greater than or equal to zero at end of each quarter
    - Feedstock attributes must be counted as processed (subtracted from the inventory accounting system) for all fuel produced in each quarter
  3. CARB-approved allocation methodology must be used to appropriately label and report fuel in each quarterly reporting period
- For feedstocks that do not use inventory accounting (i.e. use chemical analysis to determine converted fraction), propose that all analysis results must be reported, and the most recent result is used to appropriately label and report quantities of fuel in each quarterly reporting period

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## CA-GREET3.0 AND SIMPLIFIED CI CALCULATORS

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### CA-GREET3.0 and Simplified CI Calculators

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- In response to stakeholder comments, staff proposes adjustments to transport parameters and other minor updates to the CA-GREET3.0 model
  - Baseline CIs and annual CI benchmarks changed by less than 0.02 gCO<sub>2</sub>e/MJ
- Staff corrected an error that decreases the CI of the California Average Grid Electricity Lookup Table pathway to 93.75 gCO<sub>2</sub>e/MJ
- Lookup Table pathways and Tier 1 Simplified CI Calculators are updated in response to stakeholder feedback and to align with changes to CA-GREET3.0
  - All changes will be documented in Attachment C: CA-GREET3.0 Technical Support Documentation

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## Pathway Application and Certification

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- Tier 1 pathways for grain sorghum
  - Staff proposes to include grain sorghum fiber as a feedstock for ethanol, and distiller's sorghum oil as a feedstock for biodiesel and renewable diesel pathways
- Provisional pathways
  - Staff proposes to clarify that provisional pathways may be certified for new facilities, or for existing facilities that demonstrate a process change, based on at least three months of operational data
- New Temporary pathways
  - Staff proposes to allow new Temporary pathways to be certified only for fuels or feedstock-fuel combinations that do not appear in Table 8 of the proposed regulation

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## Biomethane from Anaerobic Digestion of Organic Waste

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### Tier 1 Simplified CI Calculator

- A wide variety of organic wastes can be assessed using this calculator
- Tier 1 Manual clarifies the types of waste that can be included under each of the three categories that are represented:
  - Food scraps, Urban landscaping waste (ULW) and Other organic waste
- Food scraps and ULW pathways may use built-in assumptions of mixed waste composition, carbon contents, alternative fates and diversion rates
- "Other" category can be used for materials that do not fit the food scraps or ULW descriptions and assumptions
  - Submit user-defined moisture content, degradable organic carbon (DOC) content and fraction of DOC that decomposes ( $DOC_d$ )
  - Demonstrate the alternative fate and diversion rate of the material from its avoided fate (e.g. landfill, compost, animal feed, and land application) under typical commercial practices

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## Carbon Capture and Sequestration Protocol

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### Proposed changes:

- Allow peer-reviewed proprietary subsurface models, on condition that they be peer-reviewed initially and validated by third party upon any modeling input updates
- Increase flexibility for monitoring provisions, including aerial surveys for post-injection site care monitoring
- Minor technical clarifications

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## Refinery Provisions

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### Refinery Investment Credit Program

- Staff proposes to remove the word “pilot” from the title
  - This would provide policy certainty for refinery investment credit projects

### Renewable Hydrogen Refinery Credit Program

- Staff proposes to clarify the credit calculation for RNG that displaces fossil natural gas in steam methane reforming by including “well-to-hydrogen production” instead of well-to-refinery gate CIs
  - This would clarify the system boundary and make credit calculations consistent with the biomethane accounting approach in CA-GREET3.0

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## Third-Party Verification

### Verification conflict of interest changes to original proposal

- Phasing in specified high-risk services through August 31, 2023
- Consulting and other services in section 95503(b)(2)(C), if not included in the verification process, added to the phase-in period

### Deferred verification eligibility

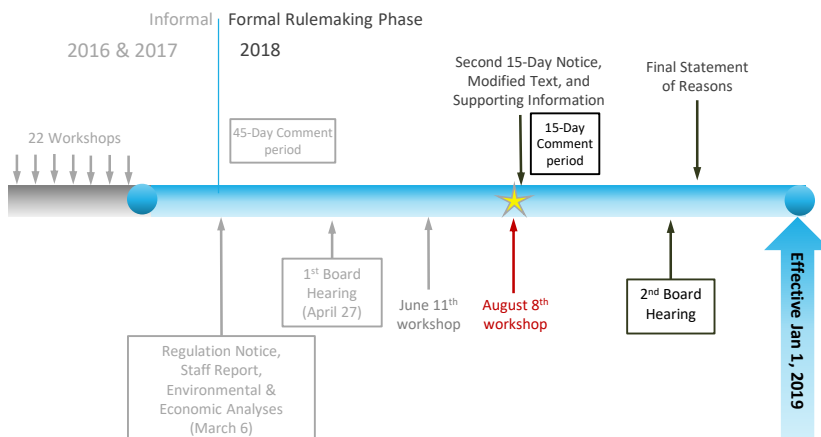
- Alternative fuel pathway holders, and fuel reporting entities for Lookup Table pathways
- Includes: Liquids and non-liquids, credit- and deficit-generating (e.g., fossil CNG and LPG)
- Excludes: Biomethane supplied using book-and-claim accounting

### Specified source feedstocks

- Specified source feedstocks used in pathways that don't require CI monitoring would be reviewed during verification of Quarterly Fuel Transactions Reports
- Includes Temporary and Lookup Table pathways, such as hydrogen produced from biomethane supplied using book-and-claim accounting

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## Rulemaking Timeline



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THANK YOU!